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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/521,173 | 08/30/2005 | Kikuo Okuyama | 0074/048001 | 2931 |
| 22893 7590 04/08/2008 SMITH PATENT OFFICE 1901 PENNSYLVANIA AVENUE N W SUITE 901 WASHINGTON, DC 20006 | | | | |
| EXAMINER BAINBRIDGE, ANDREW PHILIP | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/521,173

Applicant(s)

OKUYAMA ET AL.

Examiner

ANDREW P. BAINBRIDGE

Art Unit

4156

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/02)
- Paper No(s)/Mail Date 11/30/2006, 1/14/2005
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claims 2 and 4 are objected to because of the following informalities: Applicant should consider changing the phrase "a power switch which controls emission and stop of the x-ray" to "a powered switch to control the amount of or to stop the emission of the x-rays". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-2 are rejected under 35 U.S.C. 103(a)** as being unpatentable over JP 2000-167388 (Akira Mizuno, et. al.), and further in view of JP 2951477 (Mizushima).

5. Claim 1, Mizuno teaches all of the elements of claim 1 including a chamber (Figure 1, el. 9), an inlet duct (1), and outlet duct (1a), but only teaches the use of a "soft x-ray" (6, Abstract). Mizushima teaches this missing element. (see "means for solving

the Problem" and "Function", pages 1 and 2 of the provided translated). Mizushima teaches the use of Beryllium (Be) as an X-ray source to emit waves between 2 and 20 angstroms. The Patent examiner takes official notice that 1 nm is equal 10 angstroms, which means that the 2 to 20 angstroms wavelength of Be overlaps the claimed range of 0.13 nm to 2 nm. A person of ordinary skill in the art would have found it obvious to adapt Mizuno with Mizushima because both are related to creating clean air free of ozone and contaminants with the use of x-ray sources to clean the air. A person of ordinary skill in the art would be motivated to adapt Mizuno with Mizushima because Mizushima teaches a good source of x-rays to use to create the soft x-rays that Mizuno requires to create cleaner air.

Claim 2, Mizuno teaches a control device consisting of a power supply and a control part, (Figure 1, el. 7, Abstract), which includes a power switch to control emission and to stop the X-ray.

6. **Claim 3 are rejected under 35 U.S.C. 103(a)** as being unpatentable over JP 2001-070743 (Takao Ito, et. al.), and further in view of Mizushima.

7. Claim 3, Takao teaches all of the elements of claim 3 including a chamber (Figure 1, el. 11, Abstract), an x-ray emitting section ((17), and an electric field with electrode plates (12-13), an inlet duct (16) and an outlet duct (14-15), but does not explicitly teach that the x-rays are between 0.13 nm and 2 nm. Mizushima teaches this missing element. Mizushima teaches the use of Beryllium (Be) as an X-ray source to emit waves between 2 and 20 angstroms. The Patent examiner takes official notice that 1 nm is equal 10 angstroms, which means that the 2 to 20 angstroms wavelength of Be

overlaps the claimed range of 0.13 nm to 2 nm. A person of ordinary skill in the art would have found it obvious to adapt Takao with Mizushima because both are related to creating clean air free of ozone and contaminants with the use of x-ray sources to clean the air. A person of ordinary skill in the art would be motivated to adapt Takao with Mizushima because Mizushima teaches a good source of x-rays to use to create the soft x-rays that Takao requires to create cleaner air.

8. **Claim 4 are rejected under 35 U.S.C. 103(a)** as being unpatentable over JP Takao as modified by Mizushima and further in view of Mizuno.

9. Claim 4, Takao as modified by Mizushima teaches all of the elements of claim 4 except for a power switch to control the x-ray emission. Mizuno teaches this missing element. (Figure 1, el. 7, Abstract). A person of ordinary skill in the art would have found it obvious to adapt Takao with Mizuno because both are related to creating clean air free of ozone and contaminants with the use of x-ray sources to clean the air. A person of ordinary skill in the art would be motivated to adapt Takao with Mizuno because Mizuno teaches a good and reliable way to control the emission of x-rays by a switch which in turn controls the amount of ions created, which can only improve the versatility of the Takao device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW P. BAINBRIDGE whose telephone number is (571)270-3767. The examiner can normally be reached on Monday to Friday, 8:30 to 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Isabella can be reached on 571-272-4749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrew Bainbridge

/Dmitry Suhol/
Primary Examiner, Art Unit 3725